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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,020	04/08/2004	Kon-Tsu Kin	KINK3006/EM	7561
23364 7590 05/28/2008 BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314				
EXAMINER				
MENDEZ, ZULMARIAM				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/820,020

**Applicant(s)**

KIN ET AL.

**Examiner**

ZULMARIAM MENDEZ

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gavrel et al. (US Patent no. 6,719,894) in view of Halldorson et al. (US Patent no. 6,358,398).

Regarding claim 1, Gavrel discloses a process and apparatus for removing contaminants from a waste fluid (col. 2, lines 15-18) comprising: a water treatment reactor (140) for simultaneous electrocoagulation and oxidation processes (col. 4, lines 47-59) with a series of parallel electrolytic sacrificial plates or electrodes (141; col. 4, lines 29-33) wherein the anode sacrifices metallic ions into solution and liberates

oxygen gas (col. 1, lines 42-45); an intake tube for introducing influent water into the bottom of the tank (col. 3, lines 62-65; col. 4, lines 2-4; see figure 1); an input (126) for introducing an oxygen containing gas, such as ozone (col. 4, lines 61-67) into the bottom of the tank (see figure 1) where the influent water and the oxygen containing gas are mixed; an outlet tube for venting processed water from a top of the tank (col. 4, lines 2-4); a gas liquid separator which is in fluid communication with the tank at the top for expelling a gas without water expelling (col. 4, lines 16-24); a direct current supply (145; col. 4, lines 41-45); wherein influent water introduced into the bottom of the tank (140) by the intake tube and oxygen containing gas introduced into the bottom of the tank by the input (126) are mixed together at the bottom of the tank (140, see figure 1).

However, Gavrel fails to teach wherein the sealed tank (140) has a metal body, or a metallic material mounted on an inner wall thereof for use as a cathode. It has been held that if a claimed invention reads on the prior art except with regard to the position of a component of a device, the invention is unpatentable if switching the position of the component would have not modified the operation of the device. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). In this case, switching the positions of the electrodes would not modify the operation of the device, which is to allow the flow of ions into solution and accomplish an electrolytic reaction thereby. This is exemplified by Halldorson who teaches a wastewater treatment apparatus to perform electro-coagulation and advanced oxidation processes comprising a sealed tank/reactor (190/42, as shown in figure 4), may have a metal body, or a metallic material mounted on an inner wall thereof, for use as a cathode (198, 200); a sacrificial electrode used as

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an anode (202) which is disposed in the tank and non-electrically connected to the cathode (anode includes a non conductive mesh or screen member (206)) in order to donate ions in the electrolytic process.

Regarding claim 2, the reactor of Gavrel comprises an oxidant supply device mounted on the intake tube (col. 4, lines 61-67).

Regarding claim 3, Gavrel fails to explicitly disclose wherein the oxidant supply device includes a venture in fluid communication with the intake tube. Halldorson teaches a wastewater treatment apparatus where the oxidant supply device (18) includes a venturi (16) in fluid communication with the intake tube for introducing influent water into the bottom of the cell (42) in order to provide a pressure drop across the venture to entrain the amount of ozone in the waste water that is desirable for the particular composition of the waste water being treated (col. 9, lines 15-18).

Therefore, one having ordinary skill in the art at the time of the invention would have found it obvious to use a venturi in the oxidant supply device, as taught by Halldorson, in the apparatus of Gavrel, in order to provide a pressure drop across the venture to entrain the amount of ozone in the waste water that is desirable for the particular composition of the waste water being treated.

Regarding claims 4 and 5, the sacrificial electrode of Gavrel may be fabricated from iron, aluminum, copper carbon and steel, among others (col. 4, lines 29-36)

Regarding claim 6, the reactor of Halldorson is made of stainless steel (col. 16 lines 2-6)

Regarding claim 7, Gavrel fails to teach wherein the mixing device comprises a spiral board, a packing material or a perforated dish. However, the mixing device of Halldorson comprises perforated dishes mounted upon an auger profile rod, as shown in figure 21, for further enhancement of the process, to transport fluid within the cell and assist in the countercurrent interaction of dissolved gas and aqueous solution (col. 15, lines 14-25).

Therefore, one having ordinary skill in the art at the time of the invention would have found it obvious to modify the structure of the mixing device, as taught by Halldorson, in the apparatus of Gavrel for further enhancement of the process as well as to assist in the countercurrent interaction of dissolved gas and aqueous solution.

Regarding claim 8, the gas liquid separator, as disclosed by Gavrel, further comprises a valve to allow gases to escape (col. 4, lines 16-24).

### ***Response to Arguments***

4. Applicant's arguments, see page 5, filed on February 25, 2008, with respect to the rejections of claims 1-8 under 35 U.S.C 103(a) as being unpatentable over Halldorson in view of Knieper have been fully considered and are persuasive. The applicant argues that Halldorson teaches a two stage system whereas the claimed invention requires performing oxidation and electrocoagulation simultaneously. Therefore, the rejection has been withdrawn. However, upon further consideration, and in view of the amendments made to the claims, a new ground of rejection has been made above.

***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **ZULMARIAM MENDEZ** whose telephone number is (571)272-9805. The examiner can normally be reached on Monday-Thursday, 8:30am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Z. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795